

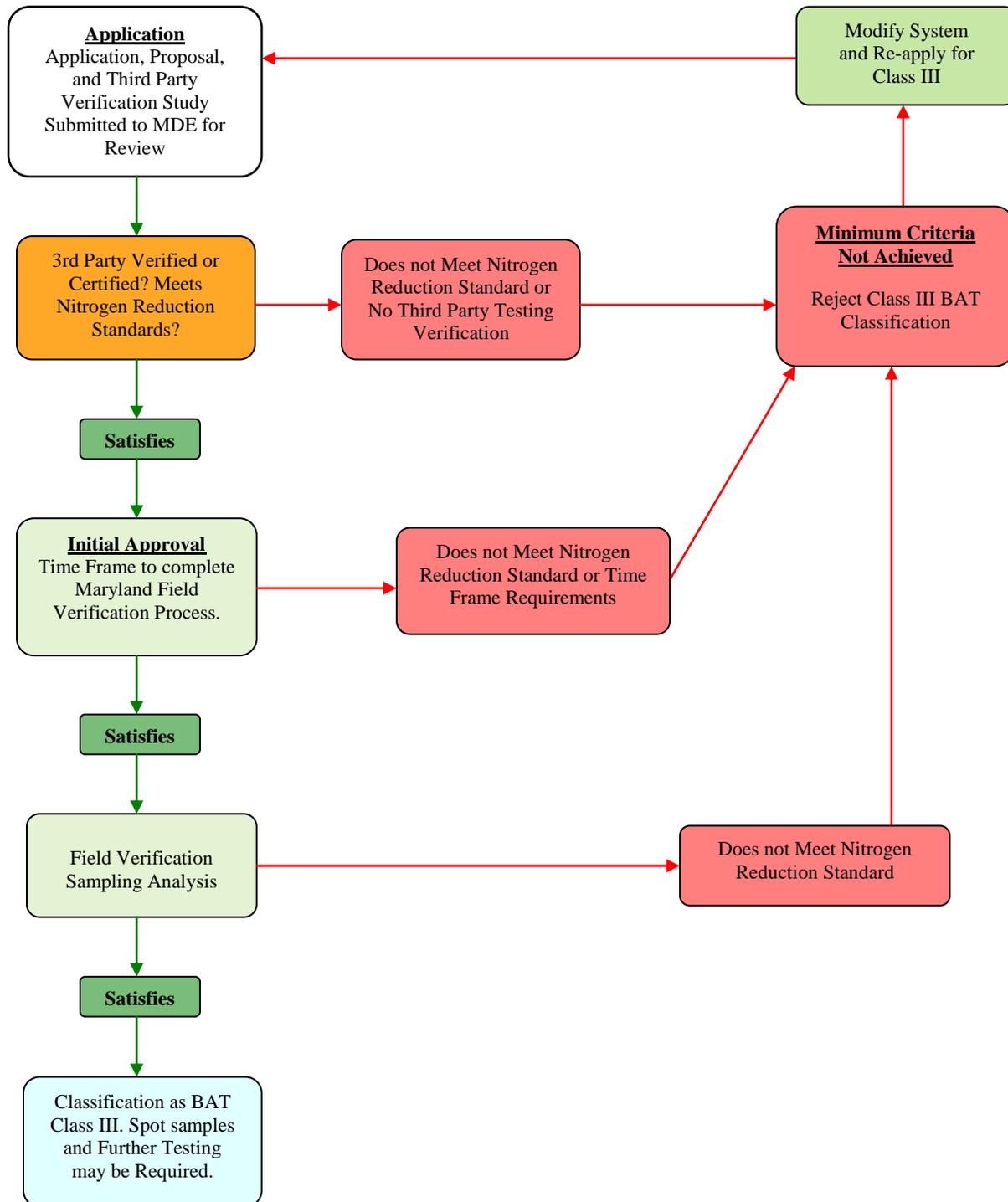


# MARYLAND DEPARTMENT OF THE ENVIRONMENT

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## BAT CLASS III VERIFICATION PROGRAM FLOWCHART 2018



**Required Total Nitrogen (TN) Standards:** A standard of an assumed 60.0 mg/L TN will be used as the influent value. The Arithmetic mean effluent TN concentration must be 48.0 mg/L or less to be classified as a BAT Class III.

## MDE BAT Class III Field Verification Protocol

### Important

**BAT Class III technologies may only be installed when paired with a BAT Class IV soil dispersal system.**

### Purpose

The purpose of this document is to outline the field verification protocol for Best Available Technology (BAT) Class III systems in Maryland. Class III systems are defined as pre-treatment systems approved by MDE as capable of reducing effluent Total Nitrogen (TN) to 48.0 mg/L or less. These technologies may only be installed as BAT when paired with a Class IV soil dispersal system.

### System Requirements

BAT Class III technologies must have one of the following certifications from a third party verification organization: NSF 245, NSF 40 Class I, CAN/BNQ 3680-600, CEN Standard 12566-3 or equivalent. Technologies proposed as BAT Class III must first apply to MDE for BAT classification using the BAT application. The application needs to be accompanied by a general technology description, installation manuals, Operation and Maintenance (O&M) manuals, the final report from the third party verification organization, sampling protocols, and a sample O&M contract. Once submitted to the BAT Technical Review Committee (TRC), analysis of the application materials will begin. The TRC may require more information in some cases. If all of the criteria are met, the technology may enter into the field verification process.

Field verification sampling will take place using the first 12 units installed in Maryland. Sampling details and requirements are listed on page three of this document. The arithmetic mean of the effluent TN from all 24 samples must be 48.0 mg/L or less to be considered a BAT Class III in Maryland. A standard of an assumed 60.0 mg/L TN will be used as the influent value, and no influent sampling will be considered. The TRC will analyze for the TN reduction capabilities of the unit. If the unit is capable of reducing effluent TN to 48.0 mg/L or less, it may then be classified as a BAT Class III, which may only be installed when paired with a BAT Class IV soil dispersal system. If the analysis of data concludes that the unit is not capable of reducing effluent TN to 48.0 mg/L or less, the technology will be denied entry into the BAT program entirely. Technologies that fail to meet the BAT Class III criteria may choose to re-apply for Class III consideration after demonstrating significant modifications of the technology to the TRC.



## Sampling

1. MDE will require a specific sampling protocol for each technology. This protocol must be submitted to and reviewed by the TRC at the time of application.
2. MDE will require the first 12 systems installed in Maryland to be sampled twice in a 12 month time period. Six samples must occur in each season; seasons are defined in Table 1 on page 4 of this document.
3. All samples collected will be 24-hour composite effluent samples.
4. A minimum of five months must separate the two samples taken at each site to ensure that samples are taken in different seasons.
5. Three (3) systems installed after the first 12 will be designated as reserve sampling sites in case of issues with any of the 12 sites beyond the control of the manufacturer. If an issue arises with one of the 12 sites, the TRC shall be notified prior to reserve site utilization.
6. Sampling must be completed within 12 months after the manufacturer-specified start-up period for each site.
7. Samples are to be collected by a third party testing facility chosen and trained by the manufacturer. A list of certified labs can be found on the MDE website. A manufacturer representative may be present at the time of sampling to ensure that a quality sample is taken, but may not take the sample.
8. All sampling methods and preservation techniques should be consistent with “Standard Methods for the Examination of Water and Wastewater,” 22<sup>nd</sup> Edition, 2012, A.P.H.A. or any EPA approved method.
9. Changes to the testing facility or sampling protocol must be reported to MDE within 30 days.
10. Any changes or adjustments to the system beyond routine maintenance are prohibited until all sampling is complete.
11. The samples collected must be analyzed in the lab for Total Nitrogen and its components of TKN, Nitrate, and Nitrite at minimum. Onsite measurements of dissolved oxygen (DO), wastewater temperature (C°), biochemical oxygen demand (BOD), Total Suspended Solids (TSS), and pH should be taken.



**Table 1.**

<b>Season</b>	<b>Dates</b>	<b>Number of Samples</b>
<b>Winter</b>	Dec. 15 to Feb. 15	6 sites
<b>Spring</b>	Feb. 16 to May 30	6 sites
<b>Summer</b>	May 31 to Aug. 30	6 sites
<b>Fall</b>	Aug. 31 to Dec. 14	6 sites

### **Monitoring and Reporting**

1. New installations shall be reported to MDE within 30 days.
2. Sampling results and documentation shall be submitted by the system manufacturer or his representative within 30 days of the completion of laboratory analysis.
3. MDE retains the right to perform its own sampling at any point during or after the required sampling period. MDE may also require further sampling after the field verification process is complete if deemed necessary.
4. Local Approving Authorities may have additional sampling requirements; therefore, manufacturers should contact them to ensure proper compliance.
5. MDE may revoke approval if sampling results generated during the verification period indicate that the system is not meeting required effluent characteristics.
6. MDE will consider all efforts to work with manufacturers in situations where effluent standards are not being met. If further monitoring is required, it will be at the expense of the manufacturer.
7. Operation and Maintenance will occur for each unit at a minimum of once per year and shall be performed by a certified service provider.
8. Operation and Maintenance contracts shall begin on the date of installation.

### **Design**

In Maryland, the local Approving Authority is delegated the permitting responsibility for the construction of the dispersal method for the OSDS effluent. Manufacturers must comply with the standard operating procedures of the local Approving Authority pertaining to the installation of OSDS.



## Bay Restoration Fund (BRF) Best Available Technology (BAT) Class III Application

**Date:**

**Manufacturer and Product Information**

Name of Product:

Name of Manufacturer:

Address of Manufacturer:

**Contact for BAT Application**

Name:  
Email:  
Phone:

**Local/Vendor Contact**

Name:  
Email:  
Phone:

**Please Note**

If this application is approved, the field verification data will be required to meet an arithmetic mean effluent TN concentration of 48mg/L or less for BAT class III. Class III units may only be installed when paired with a Class IV soil dispersal system.

**Certifications**

Check all of the following certifications that apply:

- NSF 40 Class I
- NSF 245
- CAN/BNQ 3680-600
- CEN Standard 12566-3
- Other:



**Required Attachments:**

- Brief description on company letterhead of technology in relations to nitrogen removal, including information regarding number of pumps, filter, and additives (if needed):
- Third party verification final report
- Installation manuals
- Operation and Maintenance (O&M) Manuals
- Sample O&M contract
- Description of sampling procedures

For further explanation of the process of applying to enter the Bay Restoration Fund, please feel free to contact:

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Baltimore, MD 21230  
[travis.sterner@maryland.gov](mailto:travis.sterner@maryland.gov)  
410-537-3635 phone  
410-537-3163 fax

**Signature** I have read and understand the terms and processes stated in this document for field verification and certification for BAT Class III systems in Maryland.

Name (Printed): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

